



LAKE CARRIERS' ASSOCIATION



Ballast Water Regulation in the Great Lakes

For over 30 years, the Lake Carriers' Association (LCA) has been engaged with researchers and regulators to identify ways to minimize the impacts of and risks from nonindigenous aquatic nuisance species (NANS) within the Great Lakes. Focusing on the prevention of new introductions, the LCA pushed for ballast water exchange and flushing requirements for vessels entering the Great Lakes system. To reduce the risk of spread within the basin, the LCA wrote general and organism specific best management practices (BMPs). The LCA has been an active participant of the Great Lakes and National Aquatic Nuisance Species Panels and consistently attended the International Maritime Organization's (IMO) Ballast Water Working Group. Ballast water regulations that are protective of the environment and maintain efficient waterborne commerce are important to ensure a healthy the Great Lakes region.

No Laker has been responsible for the invasion of a nonindigenous aquatic nuisance species within the Great Lakes, but Lakers have consistently taken measures to reduce the transfer of invasive species introduced to the Great Lakes by oceangoing vessels (i.e., Salties). Table 1 provides a history of Laker actions, guidelines, and regulations to protect the Great Lakes.

Table 1. History of Laker Ballast Water Actions and related Ballast Water Guidelines and Regulations.

Date	Issue – Source	Action
1982	Ballast water discharge in Magdalen Islands	Canadian Coast Guard "Notice to Mariners #995 prohibited ballast water discharge within 10 nm of the Magdalen Islands
May 1, 1989	Protect the Great Lakes Region from non-native fish and other aquatic organisms	The Canadian Voluntary Guidelines for the Control of Ballast Water Discharges from Ships Proceeding to the St. Lawrence River and Great Lakes (hereafter Voluntary Guidelines) was released. First large-scale attempt at ballast water management (BWM). The Voluntary Guidelines applied to all transoceanic vessels bound for the Great Lakes region.
1990	Aquatic Invasive Species in the Great Lakes	Canada moved the boundary to Quebec City to protect all freshwater areas of the St. Lawrence River.
March 15, 1991	Protect the Great Lakes Region from non-native fish and other aquatic organisms	Joint United States and Canadian Voluntary Guidelines for Control of Ballast Water Discharges from Ships in the Great Lakes – Notice of adoption of joint voluntary guidelines (56 FR 11330). Effective March 15, 1991. The voluntary guidelines are applicable to any ship that carries ballast water and that, after operating on the high seas, is inbound for ports upstream of Quebec City or any ports on the Great Lakes.

Date	Issue – Source	Action
April 2, 1993	Ruffe invasion to Duluth Harbor	<p>Developed the Great Lakes Maritime Industry Voluntary BMPs for the Control of Ruffe in Lake Superior Ports. Actions included, but not limited to:</p> <ul style="list-style-type: none"> • Specific areas for pumping out ballast water depending on intake screen hole dimensions, • Restrictions and limitations of discharges in specific harbors if intake screens have holes ½ inches in diameter or less between May 15 and September 15, • Limits on ballast water exchange, • Ballast water records on activities available to U.S. or Canadian Coast Guard.
1996 – 1998	Ballast Water Treatment Demonstration Project	The LCA co-chaired a project with Northeast-Midwest Institute (NEWM) to evaluate filtration, hydrocyclone, and UV-based treatment systems. \$3 Million in research.
1997	Ruffe invasion to Alpena, MI	Further use of BMPs listed for 1994 Ruffe invasion in Duluth Harbor.
<p>May 17, 1999 (64 FR 26672)</p> <p>Effective July 1, 1999</p>	<p>Implementation of the National Invasive Species Act of 1996 (NISA)</p>	<p>U.S. Coast Guard (USCG) Interim rule that creates 33 CFR 151 Subpart D that includes voluntary requirements for Lakers in 33 CFR 151.2035(a):</p> <ul style="list-style-type: none"> • Avoid the discharge or uptake of ballast water in areas within or that may directly affect marine sanctuaries, marine preserves, marine parks, or coral reefs. • Minimize or avoid uptake of ballast water in the following areas and situations: areas known to have infestations or populations of harmful organisms and pathogens (e.g., toxic algal blooms), areas near sewage outfalls, areas near dredging operations, areas where tidal flushing is known to be poor or times when a tidal stream is known to be more turbid, in darkness when bottom-dwelling organisms may rise up in the water column, and where propellers may stir up the sediment. • Clean the ballast tanks regularly to remove sediments. Clean the tanks in mid-ocean or under controlled arrangements in port, or at dry dock. Dispose of your sediments in accordance with local, State, and Federal regulations. • Discharge only the minimal amount of ballast water essential for vessel operations while in the waters of the United States. • Rinse anchors and anchor chains when you retrieve the anchor to remove organisms and sediments at their place of origin. • Remove fouling organisms from hull, piping, and tanks on a regular basis and dispose of any removed substances in accordance with local, State and Federal regulations. • Maintain a ballast water management plan that was developed specifically for the vessel. • Train the master, operator, person in-charge, and crew, on the application of ballast water and sediment management and treatment procedures.
September 1, 2000	Protect waters from pathogens and other non-indigenous aquatic organisms	Canadian guidelines for the “Control of Ballast Water Discharge from Ships in Waters under Canadian Jurisdiction” (hereafter Ballast Water Guidelines) were released and revoked and replaced the 1989 Voluntary Guidelines.
September 28, 2000	The Shipping Federation of Canada	Code of Best Practices for Ballast Water Management (BWM) that include ten items listed for vessels entering the Great Lakes: ballast water exchange/flushing, regular inspection of ballast tanks and removal of sediment, USCG BWE measures, USCG record keeping and reporting, information and logs to inspectors, precautionary approaches to uptake, disposal of sediment, foster and support scientific research programs, cooperate in standards development for treatment systems, and strive toward global integrated BWM strategies.
2001	Invasions	LCA issues general guidelines for all Great Lakes.

Date	Issue – Source	Action
January 26, 2001	<p>Transfer of ANS within the Great Lakes</p> <p>(Regulatory sponsor - Duluth-Superior Harbor and Alpena, Michigan Ruffe Voluntary Ballast Management Programs)</p>	<p>Voluntary Management Practice to Reduce the Transfer of Aquatic Nuisance Species within the Great Lakes by the LCA and the Canadian Shipowners' Association included, but not limited to:</p> <ul style="list-style-type: none"> • Vessel operators will assist in developing programs should U.S. Fish and Wildlife Service (or an equivalent Canadian authority) determine a nuisance species has established niche communities in a specific harbor, providing that these programs will result in substantial prevention of the spread of the species or harmful organism via ballast water. • Each vessel will perform annual inspections to assess sediment accumulations. Removal of sediment, if necessary, will be carried out. Records of these actions will be kept onboard the ship. • Each company will develop sediment removal policies and plans. • When practical and safe, vessels will take only the minimum amount of ballast required to safely depart the dock and will complete ballasting in deeper water. Records of all ballasting operations will be kept onboard the ship. • Cooperation will be provided, as mutually agreed upon, for scientific research into sampling and analysis programs that will not interfere with normal and safe ship operations. • Cooperation will be provided, as mutually agreed upon, for developing and testing ballast water treatment systems. <p><i>This is the basis for the initial Great Lakes St. Lawrence Seaway ballast water requirements.</i></p>
February 27, 2002 (67 FR 8885) (Effective date March 26, 2002)	Seaway Regulations and Rules: Ballast Water	Every vessel entering the Seaway that operates within the Great Lakes and the Seaway must agree to comply with the “Voluntary Management Practices to Reduce the Transfer of Aquatic Nuisance Species Within the Great Lakes by U.S. and Canadian Domestic Shipping” of the Lake Carriers Association and Canadian Shipowners Association dated January 26, 2001, while operating anywhere within the Great Lakes and the Seaway.
March 22, 2002	Notice #6 - Water Ballast Management	<p>The Great Lakes St. Lawrence Seaway states that mariners are advised that effective with the start of the 2002 Navigation Season the following Ballast Water Management Practices will be in force to obtain clearance to transit the Seaway:</p> <p>a) every ship entering the Seaway after operating beyond the exclusive economic zone must agree to comply with the “Code of Best Practices for Ballast Water Management” of the Shipping Federation of Canada dated September 28, 2000, while operating anywhere within the Great Lakes and the Seaway; and</p> <p>b) every other ship entering the Seaway that operates within the Great Lakes and the Seaway must agree to comply with the “Voluntary Management Practices to Reduce the Transfer of Aquatic Nuisance Species Within the Great Lakes by U.S. and Canadian Domestic Shipping” of the Lake Carriers Association and Canadian Shipowners Association dated January 26, 2001, while operating anywhere within the Great Lakes and the Seaway.</p>
March 17, 2005 (70 FR 12967) (Effective date April 18, 2005)	Seaway Regulations and Rules: Periodic Update, Various Categories	Every vessel entering the Seaway that operates within the Great Lakes and the Seaway must agree to comply with the “Voluntary Management Practices to Reduce the Transfer of Aquatic Nuisance Species Within the Great Lakes by U.S. and Canadian Domestic Shipping” of the Lake Carriers Association and Canadian Shipowners Association dated January 26, 2001, while operating anywhere within the Great Lakes and the Seaway.
August 31, 2005 (70 FR 51831)	Ballast Water Management for Vessels Entering the Great Lakes that Declare No Ballast on Board	The USCG establishes best management practices for residual ballast water and sediment management to be followed by No Ballast On Board (NOBOB) vessels (i.e., oceangoing vessels).
February 2, 2006 (71 FR 5605) (Effective Date March 6, 2006)	Seaway Regulations and Rules: Periodic Update, Various Categories	Every vessel entering the Seaway that operates within the Great Lakes and the Seaway must agree to comply with the “Code of Best Practices for Ballast Water Management” (Shipping Federation of Canada) (September 28, 2000) and “Voluntary Management Practices to Reduce the Transfer of Aquatic Nuisance Species Within the Great Lakes by U.S. and Canadian Domestic Shipping” of the Lake Carriers Association and Canadian Shipowners Association (January 26, 2001), while operating anywhere within the Great Lakes and the Seaway.

Date	Issue – Source	Action
June 8, 2006 (Statutory Orders and Regulations (SOR) 2006-129)	Transport Canada: Ballast Water Control and Management Regulations	BWM regulations for BWE and salinity control. Code of Best Practices for Ballast Water Management, published by the Shipping Federation of Canada (September 28, 2000) included in regulation.
March 2007 Release (written December 2006)	Viral Hemorrhagic Septicemia (VHS) Fish Disease	<p>BMPs for Hemorrhagic Septicemia (VHS) Fish Disease that include:</p> <ul style="list-style-type: none"> • Annual inspections of ballast intakes, • Replacing screens over ballast intakes, • Lightening the vessel as much as practicable during cargo operations to elevate intakes, • Taking as little ballast as possible while still ensuring the safety of the crew and vessel, and • Using pumps to fill or empty ballast tanks – no gravity feed or drain.
2007	Combat VHS Virus LCA Press Release dated April 7, 2008	LCA members and other vessel operators in the Great Lakes pledged to annually inspect, and when necessary, replace screenings over ballast intakes, lighten the vessel as much as practical during cargo operations to elevate intakes before beginning ballasting, take as little ballast as possible while still ensuring the safety of the crew and vessel, and use pumps as macerators during uptake and discharge in waters experiencing an outbreak.
February 25, 2008 (73 FR 9950) (Effective date March 26, 2008)	Seaway Regulations and Rules: Periodic Update, Various Categories	Ballast water and trim (33 CFR 401.30) revised to include saltwater flushing and salinity level requirements.
April 7, 2008	VHS Fish Disease Supplemental (Rapid Response and Notification) LCA Press Release	<p>Upon notification from the USCG of an active VHS-related fish kill in the immediate vicinity of ballasting vessels bound for Lake Superior, vessels will implement the following steps:</p> <ul style="list-style-type: none"> • Since fish populations are most dense near shore and then thin as the distance grows, minimize the uptake of ballast in near-shore locations. • When possible, vessels that took up ballast in an area with an active fish kill will conduct a ballast exchange in the deepest, warmest water prior to entering Lake Superior. • If circumstances do not allow for exchange prior to entering Lake Superior, an exchange in deep, remote waters of Lake Superior is to be considered. • If external exchange was not possible, in-ship ballast exchange is to be considered. Another possible measure is recirculating ballast within the tank because the additional maceration will further reduce the possibility of discharging live fish or larger remains. <p>The structure safety limitations of Lakers need to be considered for any of the measures listed.</p>
December 19, 2013	2013 U.S. Environmental Protection Agency (EPA) Vessel General Permit (VGP)	<p>Mandatory BMPs for Lakers (2013 VGP 2.2.3.4)</p> <ul style="list-style-type: none"> • Each owner/operator must perform annual inspections on their vessel to assess sediment accumulations. Removal of sediment, if necessary, must be carried out. Each vessel owner/operator must develop sediment removal policies as part of their ballast water management plan. Records of sediment removal and disposal shall be kept onboard the vessel. • When practical and safe, vessels must minimize the ballast water taken up at dockside. This will typically mean limiting uptake to the amount of ballast water required to safely depart the dock and then complete ballasting in deeper water. • Owner/operators of Laker vessels must perform annual inspections of their sea chest screens to assure that they are fully intact. The inspection must ensure that no deterioration is evident and has resulted in wider openings or holes in the screen. If the screen has deteriorated such that openings are wider than the screen design, the vessel owner operator must repair or replace the screen. Any repairs must be of sufficient quality that they are expected to last at least one year. <p>These items were previously implemented by Lakers.</p>

Date	Issue – Source	Action
December 19, 2013	2013 VGP U.S. State certifications (MN, NY)	<ul style="list-style-type: none"> • Annually inspect and replace, as necessary, ballast sea chest screens. Replace screens with the smallest openings allowed by good engineering practice. Inspections must be documented by log entry, diver's report, video report, dry-docking report, marine inspection note, or surveyor's report. • During cargo operations (while accounting for boom list, hull stress, and bending moments), lighten the ship as much as practical to elevate water intakes before ballasting to minimize sediment uptake and increase water flow. • Ballast water taken aboard shall be the minimum needed to ensure the safety of the crew and vessel. Additional ballast water can be taken aboard once deeper water is reached. • Ballast water shall always be taken aboard or discharged via the pumps and never "gravity fed or drained." This also ensures organisms are pulverized by the high speed, high pressure, and tight tolerance pump. <p>These items were previously implemented by Lakers.</p>

The Great Lakes Aquatic Nonindigenous Species Information System (GLANSIS) tracks ten vectors for the introduction of NANS. Figure 1 depicts the annual number of NANS identified in the Great Lakes that is attributed to shipping. The shipping category includes ballast water and hull fouling., No new aquatic invasive species have been introduced by shipping in the Great Lakes ecosystem since 2006.

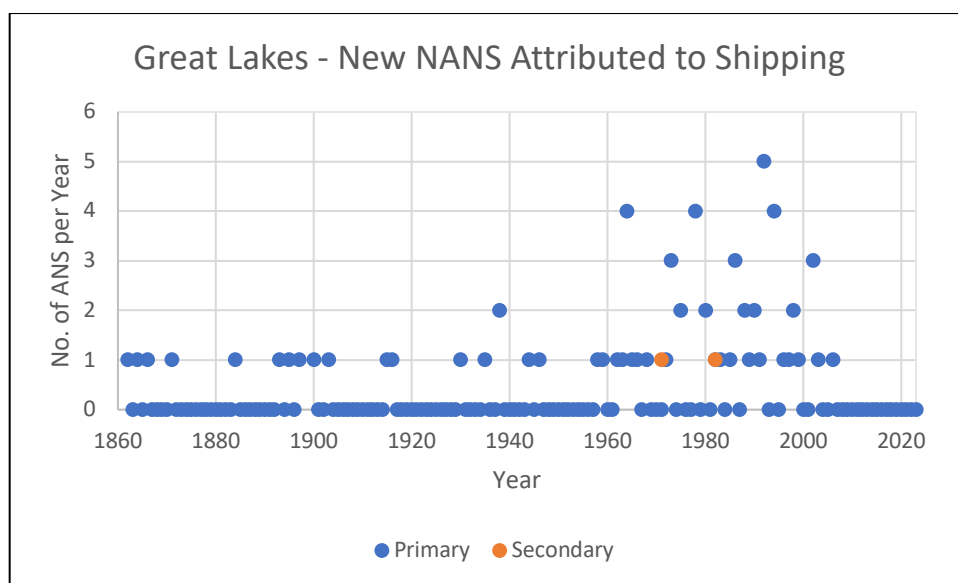


Figure 1. Great Lakes - New NANS Attributed to Shipping (GLANSIS, 2024)

The LCA is also providing information on the *Great Waters Research Collaborative: Great Lakes Ship Ballast Water Monitoring Project Technical Report* by Allegra Cangelosi *et al* dated May 31, 2018 (2018 Ballast Water Monitoring Report) referenced by many groups as the basis for concern of new species spreading in the Great Lakes due to Laker ballast water. The 2018 Ballast Water Monitoring Report reported on the presence of *Hemimysis anomala* (i.e., “bloody red shrimp”) in a Laker ballast tank. The LCA requested and funded the study that delivered the 2018 Ballast Water Monitoring Report, but the LCA was not contacted

before the draft report was shared with other groups and the media. Besides being publicly released without a peer review, the 2018 Ballast Water Monitoring Report has many issues that include:

- Release of report without review by parties involved in the study,
- Lack of peer review of the report,
- Inconsistent details in the press release,
- Use of eDNA as “proof” to identify species presence but not to determine if the bloody red shrimp was dead or alive – the presence of an organism alone does not constitute a threat of infestation, and
- Sample sizes markedly increased for the samples in which the bloody red shrimp was identified without any reason for the increased volume or deviation from the test plan.

The report specifically stated that the risk of spreading invasives from the lower lakes to Lake Superior was not to be assessed, but the conclusions specially stated that the study proved Lakers spread NANS to Lake Superior. The report “targeted” the bloody red shrimp and then skewed the research and results to conclude that Lakers transferred a new species to western Lake Superior.

According to Minnesota DNR’s website on the bloody red shrimp, “The first confirmation in Minnesota was in Lake Superior’s Duluth harbor in 2018. The discovery was a single specimen at a single sampling point and is the only discovery so far in Minnesota waters” (<https://www.dnr.state.mn.us/invasives/aquaticanimals/bloody-red-shrimp/index.html>).

The National Oceanic Atmospheric Administration GLANSIS website states “There is little or no evidence to support that *Hemimysis anomala* has significant socio-economic impacts in the Great Lakes”. GLANSIS also summarizes the U.S. Geological Survey first and last observation of species. Table 2 lists the first and last years of observations for the species.

Table 2. Bloody Red Shrimp Observations.

State/Province	First Observed	Last Observed
IL	2006	2016
IN	2016	2016
MI	2006	2020
MN	2018	2019
NY	2006	2023
OH	2009	2011
PA	2019	2019
WI	2007	2019

Notes:

Source: GLANSIS, last updated 12/15/2023

According to GLANSIS, “ballast water release from transoceanic” was most likely the source for introduction of the species. The bloody red shrimp was first observed in 2006 in Lake Erie, Lake Huron, Lake Michigan, and Lake Ontario but has failed to be established in the Lake Superior. Even now, the bloody red shrimp is not established in Lake Superior, despite, the report’s “proof” that lakers were spreading NANS to Lake Superior.

The LCA is submitting this information to correct statements made by previous commenters.

The actions taken by Lakers and ballast water practices (i.e., exchange and salinity testing) instituted for oceangoing vessels entering the Great Lakes have been effective at stopping new invasions. Laker BMPs have also been effective at resolving and invasive issues within the lakes (i.e., Ruffe invasions). Lakes have shown their commitment in developing solutions to problems that do not hinder the operation of vessels or necessary trading schedules on the Great Lakes.

In 2018, the LCA worked to pass the Frank LoBiondo Coast Guard Authorization Act of 2018 that included Title IX – the Vessel Incidental Discharge Act (VIDA) with a purpose to establish uniform, environmentally-sound standards and requirements for vessel discharges. On October 26, 2020, the U.S. EPA published the proposed Vessel Incidental Discharge National Standards of Performance and did not require vessels operating exclusively on the Great Lakes (“Lakers”) to meet the numeric ballast water discharge standard or install a ballast water management system (BWMS) due to the “challenges in operating BWMS under the environmental conditions of the Great Lakes”. BWMS are not sufficiently developed or tested for USCG type approval in the freshwater at flow rates required for operation of Lakers. Oceangoing vessels with significantly lower ballasting rates operating in the Great Lakes are also experiencing BWMS issues. The LCA has urged the U.S. EPA to fully disclose the issues associated with BWMS operation in the Great Lakes.

On October 18, 2023, the U.S. EPA published a supplemental notice to the 2020 proposal. The 2023 supplemental notice continued the stance that Lakers were not required to install BWMS but proposed including an equipment standard for a “New Laker” (to be defined by the future USCG VIDA implementation regulations) that would require the installation of a USCG type approved BWMS – but not to achieve the discharge standards. Comments were due by December 18, 2023.

The LCA submitted comments agreeing with the EPA’s reasons for not requiring the existing fleet of U.S.-flagged Lakers to install and operate BWMS equipment and establishing a new subcategory of New Laker but disagreed with the requirements and the proposed compliance timetable as no new BWMS technology will receive USCG type-approval that will operate as designed (i.e., achieve rated flow rates) aboard Lakers by the proposed effective date.

The LCA disagreed with EPA on the following items:

- imposing an equipment standard for New Lakers as Best Available Technology Economically Achievable (BAT) because no statutory requirement or regulatory precedent exist for such action,
- incorporating binational consistency as another factor considered by EPA, and
- incorporating specific vessel uptake practices in BWMPs.

The LCA provided details to support these positions. The LCA proposed setting the BWMS installation requirement based on the date when the technology is available to meet the standard. The LCA also requested that the EPA and USCG publicly disclose the reported issues with BWMS operations in the Great Lakes. EPA is failing the regulated community by not publicly disclosing these ongoing BWMS issues. Sec. 903(a)(4)(D)(ii)(II)(aa)(BB) of VIDA provides an exception for a less-stringent standard of performance at the time of promulgation in cases where information becomes available that was not available when the current standard was developed.

The U.S. EPA is estimated to publish the final VIDA performance standards by September 23, 2024, due to a consent decree with the Center for Biodiversity *et al.* Therefore, USCG regulations implementing the performance standards may be proposed by 2026.

Meanwhile, Transport Canada continues to exclude the LCA and its members from discussing options to comply with their September 8, 2024, deadline for installation of BWMS on vessels constructed on or after January 1, 2009. Transport Canada did not request information from or consider impacts to U.S.-flagged Lakers when publishing their final ballast water regulations on June 4, 2021. Due to the impasse, the LCA will be requesting that the Federal Maritime Commission move forward with the LCA petition in 2024.

Laker actions illustrate our industry's commitment to protecting the Great Lakes – home to our member companies and their sailors. The LCA and its members have and continue to participate in ballast water research and the National, Great Lakes, and State aquatic invasive species panels. The LCA will continue to share information and work with the regulatory agencies to develop requirements that will not significantly impact vessel operations while enabling increased protection of the Great Lakes. Lakers welcome any measures to protect the Great Lakes without significant impact on vessel operation and trading patterns but should not be held accountable for the spread of species, pathogens, or other waterborne pollutants that they did not bring to the Great Lakes. GLANSIS tracks more than 60 vectors that contribute to the spread within the basin. Stopping the introduction remains paramount. The LCA looks forward to working on effective options for a healthy Great Lakes.